TAOS 9.1.8 enhancements and corrections
TAOS 9.1.8 corrections

Table 3.   Change request ID numbers and problems corrected in TAOS 9.1.8 (continued)

CR ID	Problem corrected
7006665	No RADIUS accounting `Tunnel-Link-Stop` packet was being sent for an incoming call on an L2TP access concentrator (LAC) when the call went down before ICRQ was sent for the call.
7006816	The `ipportmap` statistics were not being updated when IP packets were routed via fast-path.
7006924	A consistent fatal error 29 on ingress HDLC resource card was occuring when the MAX TNT shelf controller command, `filterdisp` was issued when dial-in user was connected to `vrouter != main`.
7007004	Sessions were reported to have filters present when they infact did not. This happened for the sessions that came up after the TAOS unit had reached its stress condition(maximum calls up).
7007003	When an `ip-route` profile was created, the route was added to the interface as a permanent static route, even though the interface it was tied to was temporary—therefore the route got added without the TEMP flag. Because only routes with a TEMP flag are deleted when a call goes down, routes without a TEMP flag persisted even after the interface they were tied to no longer existed. When an attempt was made to send updates of such routes to the slots, a Warning 179 occured.
7006483	The virtual channel fault-management was not working on OC3-ATM cards
7006818	The `filterdisp` command could not retrieve filter contents for CLID or DNIS authenticated sessions, even though filters were properly applied.
7006685	There were 0.2% data packet loss for SDTN.
7006867	The pseudo route functionality was not working properly.
7007047	Changing the `call-route` profile when a TAOS unit was under heavy stress caused a Warning 179.
7007086	In the syslog messages of IPDC call setups, many LAN information records of the followoing type were found: `Cause 806 maps to "channel unacceptable"`. Some calls were being dropped because the lines were under yellow alarm.
7007104	Cancellation of voice announcements were not successful when cancellation requests were sent within 50 milliseconds of sending of the actual request for playing the announcement.
6000646	MultiDSP card could not be limited to lower modulation using the `+MS=3` answer string.
7007050	There was a high percentage of no carrier calls on MultiDSP cards compared to CSM cards, in Japan.
7007051	The V.92 quick connect was not efficient.
7007085	On MultiDSP cards, there was a high packet latency every 30 seconds at low speed v.34 modulation.
7007096	A double-free of an `mbuf` was causing CSM3v cards to reboot every two minutes with the following warnings and fatal errors:Warning 104, Warning 179, Warning 150 and FE 1, FE 8, FE 29.

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TAOS 9.1.5 enhancements and corrections

TAOS 9.1.5 introduced new enhancements and corrected certain problems from the previous release.

Note: TAOS 9.1.5 includes improved resistance to Denial of Service attempts.

TAOS 9.1.5 enhancements

TAOS 9.1.5 includes the following digital modem enhancements.

Firmware versions for digital modem cards

The Mindspeed (formerly known as Conexant) firmware versions for the MAX TNT Digital Modem slot cards include support for V.90, K56flex, K56plus, and all slower, standard modem speeds. This release includes the following Mindspeed firmware:

- Series56 Digital Modem slot cards (also called CSM/1, TNT-SL-48MOD-S56) support V2.0982-K56_2M_DLP_CSM firmware.

- Series56 II Digital Modem slot cards (also called CSM/3, TNT-SL-48MOD-SGL and TNT-SL-48MOD-S-C) support V5.8177 firmware.

- Series56 III Digital Modem slot cards (also called CSMV/3, TNT-SL-48MODV3-S-C) support V5.8177 firmware.

Firmware versions for MultiDSP cards

This release includes the following Lucent firmware versions for the MAX TNT MultiDSP slot cards:

- 48-port MultiDSP slot cards (TNTP-SL-ADI-C or TNTV-SL-ADI-C) support Controller V0.1.59, Modem DSP V0.1903.0, and VoIP DSP V3.6.2 Lucent firmware.

- 96-port MultiDSP slot cards (APX8-SL-96DSP) support Controller V0.1.59, Modem DSP V0.1903.0, and VoIP DSP V3.6.2 Lucent firmware.

TAOS 9.1.3 enhancements and corrections

TAOS 9.1.3 introduced new enhancements and corrected certain problems from the previous release.

TAOS 9.1.3 enhancements

TAOS 9.1.3 includes the following digital modem enhancements.

Firmware versions for digital modem cards

The Mindspeed (formerly known as Conexant) firmware versions for the MAX TNT Digital Modem slot cards include support for V.90, K56flex, K56plus, and all slower, standard modem speeds. This release includes the following Mindspeed firmware:

- Series56 Digital Modem slot cards (also called CSM/1, TNT-SL-48MOD-S56) support V2.0982-K56_2M_DLP_CSM firmware.
- Series56 II Digital Modem slot cards (also called CSM/3, TNT-SL-48MOD-SGL and TNT-SL-48MOD-S-C) support V5.8177 firmware.
- Series56 III Digital Modem slot cards (also called CSMV/3, TNT-SL-48MODV3-S-C) support V5.8177 firmware.

Firmware versions for MultiDSP cards

This release includes the following Lucent firmware versions for the MAX TNT MultiDSP slot cards:

- 48-port MultiDSP slot cards (TNTP-SL-ADI-C or TNTV-SL-ADI-C) support Controller V0.1.59, Modem DSP V0.1903.0, and VoIP DSP V3.6.2 Lucent firmware.
- 96-port MultiDSP slot cards (APX8-SL-96DSP) support Controller V0.1.59, Modem DSP V0.1903.0, and VoIP DSP V3.6.2 Lucent firmware.

TAOS 9.1.3 corrections

Table 4 lists the trouble report (TR) identification numbers and the problems corrected in TAOS 9.1.3.

Table 4.   Trouble report ID numbers and problems corrected in TAOS 9.1.3

TR ID	Problem corrected
6001658	The TAOS unit could not bundle two 64K nailed channels between a TNT unit and a P50 D64s2 line.
6002284	The successful connection rate (for dial-in users) was down to 80% in the TNT with DS3 interfaces.
6002335	User sessions authenticated through RADIUS using Ascend-Telnet-Profile = admin were unable to perform many administration functions, such as save the configuration to flash or network or open a trunk card.

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TAOS 9.1.3 enhancements and corrections
TAOS 9.1.3 corrections

Table 4.   Trouble report ID numbers and problems corrected in TAOS 9.1.3 (continued)

TR ID	Problem corrected
6002537	Treatment of IPX net numbers for IPX dialin clients was inconsistent with other branches.
6002459	Suspect modems were being accessed before remaining available modems were used, causing suspect modems to be used over and over and increasing call failure rate.
6002522	When a coredump was taken on a modem card, the CLID or DNIS information was not present in the stop packet of the call-logging record or in the RADIUS packets.
6002574	The client was using the DNS addresses that the TNT unit sent it in the configure nonacknowledgment (cf-nak) rather than using the DNS addresses that it had been statically assigned and that it indicated it wanted to use in the configure request.
7000009	SS7: After an administrative reset, the TNT unit generated a series of 179 warnings.
7000019	The TNT unit was not accepting multiple formats of Radius Attributes.
7000045	Stacked data was being sent to the shelf controller when an IP address was configured.
7000046	Egress PRI calls failed when, in the configuration for the lines (in the `T1 profile:line-interface:signaling-mode`) the signaling type is defined through the parameter with Feature Group D—either `inband-fgd-in-fgd-out` or `inband-fgd-in-fgc-out`.
7000084	V.110 calls were not being answered.
7000093	Call-logging did not roll back to host 1 at host reset time.
7000100	There was an error in Faststart procedure in which the TNT unit returned fast connect elements. In the call proceeding, the TNT unit did not choose the fast connect transmition proposition proposed in the Setup.
7000101, 7000120	TNT unit failed to open H.245 logical channel, causing release of call.
7000126	The TNT unit added routing entries and summerized the pool even though `Pool-Summary = No`.
7006386	The TNT unit did not re-transmit unacknowledged high-level data link control-normal response mode (HDLC-NRM) packets..
7006448	When `Call-Routing-Sort-Method = Slot-First`, the second channel call was not routed to the same slot. With call routing by telephone numbers, calls were routed to the wrong slot even though the telephone number was specified in the Call-Route profile.
7006454	The values for bytes and packets received during a session and bytes and packets sent during the same session did not equal the bytes sent (0x93), packets sent (0x91), bytes received (0x9E), and packets received (0x9D).
7006469	The `-a` option to the `callroute` command was missing in the interface.

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Table 4.   *Trouble report ID numbers and problems corrected in TAOS 9.1.3 (continued)*

TR ID	Problem corrected
7006475	A TNT unit, configured in standard (non faststart) mode, was resetting with VoIP calls initiated from an OpenPhone H323 client configured in faststart mode.
7006485	The TAOS unit was receiving 179 warnings on Madd and Madd2 cards.
7006490	The Madd and CSMX cards were generating 179 warnings.

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TAOS 9.1.2 enhancements

TAOS 9.1.2 includes the following digital modem enhancements.

Firmware versions for digital modem cards

The Mindspeed (formerly known as Conexant) firmware versions for the MAX TNT Digital Modem slot cards include support for V.90, K56flex, K56plus, and all slower, standard modem speeds. This release includes the following Mindspeed firmware:

- Series56 Digital Modem slot cards (also called CSM/1, TNT-SL-48MOD-S56) support V2.0982-K56_2M_DLP_CSM firmware.
- Series56 II Digital Modem slot cards (also called CSM/3, TNT-SL-48MOD-SGL and TNT-SL-48MOD-S-C) support V5.8177 firmware.
- Series56 III Digital Modem slot cards (also called CSMV/3, TNT-SL-48MODV3-S-C) support V5.8177 firmware.

Firmware versions for MultiDSP cards

This release includes the following Lucent firmware versions for the MAX TNT MultiDSP slot cards:

- 48-port MultiDSP slot cards (TNTP-SL-ADI-C or TNTV-SL-ADI-C) support Controller V0.1.55, Modem DSP V0.1902.0, and VoIP DSP V3.6.2 Lucent firmware.
- 96-port MultiDSP slot cards (APX8-SL-96DSP) support Controller V0.1.55, Modem DSP V0.1902.0, and VoIP DSP V3.6.2 Lucent firmware.

TAOS 9.1.1 enhancements and corrections

TAOS 9.1.1 includes the following new enhancements and corrected certain problems from the previous release.

TAOS 9.1.1 enhancements

TAOS 9.1.1 includes the following modem manager enhancements.

Firmware versions for digital modem cards

The Mindspeed (formerly known as Conexant) firmware versions for the MAX TNT Digital Modem slot cards include support for V.90, K56flex, K56plus, and all slower, standard modem speeds. This release includes the following Mindspeed firmware:

- Series56 Digital Modem slot cards (also called CSM/1, TNT-SL-48MOD-S56) support V2.0982-K56_2M_DLP_CSM firmware.
- Series56 II Digital Modem slot cards (also called CSM/3, TNT-SL-48MOD-SGL and TNT-SL-48MOD-S-C) support V5.8177 firmware.
- Series56 III Digital Modem slot cards (also called CSMV/3, TNT-SL-48MODV3-S-C) support V5.8177 firmware.

Firmware versions for MultiDSP cards

This release includes the following Lucent firmware versions for the MAX TNT MultiDSP slot cards:

- 48-port MultiDSP slot cards (TNTP-SL-ADI-C or TNTV-SL-ADI-C) support Controller V0.1.53, Modem DSP V0.1902.0, and VoIP DSP V3.6.2 Lucent firmware.
- 96-port MultiDSP slot cards (APX8-SL-96DSP) support Controller V0.1.53, Modem DSP V0.1902.0, and VoIP DSP V3.6.2 Lucent firmware.

This MultiDSP firmware addresses the following trouble reports:

1 Silence timer fixes   (TR 6001445)

   The two silence timers fixed in this release include:

   −   Retrain timer, and

   −   PH2-PH3 silence timer

   Prior to this release, modem clients did not respond to retrains initiated by server modems. This issue resulted in abnormal disconnects. The fix of the retrain timer reduced abnormal disconnects and also corrected PH2-PH3 silence timer settings.

2 V90 rate mask fix   (TR 6002242)

   Prior to this release, some client modems would always attempt to connect at 50667bps. Previous versions of TAOS incorrectly published a lack of support for 50667bps connections. This scenario sometimes resulted in the client modem disconnecting before establishing a data connection. Modems that experienced this problem included Jaguar2000, Legend, T&W, and the TP568. This TAOS release adds support for 50667bps connections.

TAOS 9.1.1 enhancements and corrections
TAOS 9.1.1 enhancements

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3 Spectral shaper fix   (TR 6001214/6001235)

In prior TAOS releases, some modems would fail to connect to MultiDSP slot cards over slightly degraded circuits. This release modifies the spectral shaping characteristics and provides better connection success rates with client modems such as the AZT MR2800 and the COM1 light modem 56k.

4 MOH disabled by default fix   (TR 6002284)

In prior TAOS releases, the Modem-on-Hold (MOH) feature disabled by default. Enabling the MOH feature would occasionally interfere with a call that was not using MOH. This release fixes that problem and has MOH enabled by default.

5 TRN1D timer fix   (TR 6002242)

This release increases the TRN1D timeout. Some client modems perform better with the MultiDSP slot cards when the TRN1D timeout has been increased.

6 V22 power level fix   (TR 6002540)

In prior TAOS releases, some client modems would fail to establish a connection when connecting to MultiDSP slot cards using V22/V22bis and would fall back to Bell 103. This release fixes this problem.

7 V8 bit mask fix   (TR 6001795/6006001)

In prior TAOS releases, the bits in the V8 masks indicating support of V23 were incorrectly set to 0. This caused some client modems to disconnect when attempting to establish a connection using V23 through V8. This release fixes this problem by setting the appropriate bits to 1, which indicate support for V23.

DSCP and TOS support

TAOS 9.1.0 provided Differentiated Services Code Point (DSCP) support by adding configurable parameters to the `Connection`, `Filter`, and `VoIP` profiles and a new RADIUS attribute to support the ability to mark packets for differentiated services that are compatible with RFC 2474 ("Definition of the Differentiated Services Field in the IPv4 and IPv6 Headers", December, 1998).

Note: For 9.1.x releases, queuing strategies, per-hop behaviors, and other QoS schemes defined in RFC 2474 are not supported.

Differentiating class of service

In TAOS 9.1.x, DSCP and Type of Service (TOS) marking is supported on the OC3-ATM2 slot card. However, if configured, it will incurr a performance overhead. The following example illustrates this behavior.

The location of the `tos-options` subprofile within the connection profile is:

```
CONNECTION > ip-options > tos-options
```

The following is an example of the `tos-options` subprofile, named test1.

```
[in CONNECTION/test1:ip-options:tos-options]
active = no
precedence = 000
type-of-service = normal
apply-to = incoming
```

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```
marking-type = precedence-tos
dscp = 00
```

In this example of the tos-options subprofile, the active field is set to no. This indicates that TOS marking will not be activated on the IP packets and the performance penalty will not be incurred.

If the `active` field is set to `yes`, the profile will look as follows:

```
[in CONNECTION/test1:ip-options:tos-options]
active = yes
precedence = 000
type-of-service = normal
apply-to = incoming
marking-type = precedence-tos
dscp = 00
```

The packets which arrive at the OC3-ATM2 slot card from the ATM interface are marked with the TOS byte, since the `apply-to` field defines the direction of the packet as incoming. This means that incoming packets will incurr a performance penalty but outgoing packets will not.

Similarly, if the `apply-to` field is changed to `outgoing` the profile looks as follows:

```
[in CONNECTION/test1:ip-options:tos-options (changed)]
active = yes
precedence = 000
type-of-service = normal
apply-to = outgoing
marking-type = precedence-tos
dscp = 00
```

Packets which are destined to egress through the OC3-ATM2 slot card will incurr a performance penalty, whereas packets arriving at the OC3-ATM2 slot card will not incurr this penalty.

Likewise, if the `apply-to` field is set to `both`, the profile looks as follows:

```
[in CONNECTION/test1:ip-options:tos-options]
active = yes
precedence = 000
type-of-service = normal
apply-to = both
marking-type = precedence-tos
dscp = 00
```

Packets destined to arrive at and egress through the OC3-ATM2 slot card will incurr the performance penalty.

Note: This behavior does not affect connection profiles configured for ingress host cards. More specifically, if a users connection profile has TOS enabled, and the card connects to an ingress host card (e.g. 48-port MultiDSP slot card), packets sent from that profile will have the TOS byte marked in the IP header (on the ingress-host card), and if the packets egress through the OC3-ATM2 slot card, they will not incurr the performance penalty; provided that TOS is not enabled on the OC3-ATM2 slot card connection profile.

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Command line changes

The following two parameters have been added to the `Connection`, `Filter`, and `VoIP` profiles:

Parameter	Setting
`marking-type`	`precedence-tos` (default)—specifies RFC 791 as the standard to differentiate class of service
`dscp`	`dscp`—specifies RFC 2474 as the standard to differentiate class of service. The DSCP value if DSCP is specified in the `marking-type` parameter. Values can range from 00 to FF (hexidecimal)

Note: Although all eight bits of the second octet in the IP packet header can be set by entering hexidecimal values from 00 to FF, to stay compliant with RFC 2474 only the first six bits should be set, by entering values from 00 to 3F.

Connection profiles

In a `Connection` profile, the new DSCP parameters are located in the `tos-options` subprofile, as shown in the following example:

```
[in CONNECTION/test-profile:ip-options:tos-options]
active = no
precedence = 000
type-of-service = normal
apply-to = incoming
marking-type = precedence-tos
dscp = 00
```

Filter profiles

In a `Filter` profile, the new DSCP parameters are located in the `tos-filter` subprofile of a specific input or output filter, as shown in the following example:

```
[in FILTER/test-filt:input-filters[1]:tos-filter]
protocol = 0
source-address-mask = 0.0.0.0
source-address = 0.0.0.0
dest-address-mask = 0.0.0.0
dest-address = 0.0.0.0
Src-Port-Cmp = none
source-port = 0
Dst-Port-Cmp = 0
dest-port = 0
precedence = 000
type-of-service = normal
marking-type = precedence-tos
dscp = 00
```

VoIP profiles

In the `VoIP` profile, the new DSCP attributes are located in the `tos-options` subprofile, as shown in the following example:

```
[in VOIP/{ "" "" }:tos-options]
active = no
precedence = 101
type-of-service = latency
apply-to = both
marking-type = precedence-tos
dscp = 00
```

RADIUS support

A new VSA RADIUS attribute has been defined to support DSCP marking from RADIUS profiles. The following attribute has been added to the RADIUS dictionary file:

```
ATTRIBUTE       Ascend-IP-DSCP                    3          integer
```

The following attribute values have been added to the dictionary file:

```
VALUE Ascend-IP-TOS IP-TOS-Dscp                           128
VALUE Ascend-IP-DSCP IP-DSCP-Default                        0
```

To select DSCP marking over the default `Precedence-TOS` marking, the `Ascend-IP-TOS` RADIUS attribute must be set to `IP-TOS-Dscp`. The new `Ascend-IP-DSCP RADIUS` attribute is used to specify the DSCP value to be set in the `Connection` profile. The value specified in the RADIUS profile must be the decimal equivalent of the binary bit setting desired in the second octet of the IP packet header.

Following is an example RADIUS profile, named `test2`. The last two lines show how to specify the use of DSCP marking and set the DSCP value to 252.

```
test     Password              =        "test2"
         Ascend-Route-IP       =        Route-IP-Yes,
         Ascend-Bridge         =        Bridge-No,
         Ascend-Idle-Limit     =        0,
         Ascend-IP-TOS         =        IP-TOS-Dscp,
         Ascend-IP-TOS-DSCP    =        252
```

TAOS 9.1.1 corrected problems

Table 5 lists the trouble report (TR) identification numbers and the problems corrected in TAOS 9.1.1.

Table 5.   Trouble report ID numbers and problems corrected in TAOS 9.1.1

TR ID	Problem corrected
TR 6000936	Warning 330 and FE42 (fatal error) messages were appearing on CSM3V slot cards in TAOS units. (The FE42 index decoded as FATAL_READY_HANG_FAULT. The Warning 330 index decoded as ERROR_GDB_PROTECTION_FAULT.)

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TAOS 9.1.1 corrected problems

Table 5.   Trouble report ID numbers and problems corrected in TAOS 9.1.1 (continued)

TR ID	Problem corrected
TR 6001020	Modems in TAOS units were sometimes moved to the suspect list for inadequate reasons.
TR 6001758	TAOS units were not correctly handling L2TP packets larger than 1500 bytes.
TR 6001935	The L2TP M-bit was incorrectly set to 0 instead of 1 for AVP 29 and AVP 32.
TR 6001986	The `netstat -i` command reported incorrect values for the DS3-ATM, OC3-ATM, and E3-ATM slot cards.
TR 6002013	The `refresh -p` command sometimes failed to correctly update routes in the routing table.
TR 6002076	L2TP authentication sometimes failed because the `hostname` field length was too small.
TR 6002118	TAOS units with a CSMX Modem slot card sometimes experienced Warning 179 errors.
TR 6002133	When configured to use two-stage dialing, the MultiVoice® Gateway did not prompt the user for the end point phone number.
TR 6002143	MultiVoice® Gateways did not successfully place fax calls to some destinations.
TR 6002167	Some NT users were unable to establish a PPTP session, receiving the error message `GRE_PB: No listener for protocol 0x880B`.
TR 6002170	When adding channels to an MP connection, TAOS units ignored the subaddress in the BACP field.
TR 6002171	An incorrect Caller ID was assigned to incoming ISDN calls whose caller ID was suppressed.
TR 6002172	A TAOS unit could leave an SS7/CIC in a connected state even after the call was disconnected.
TR 6002189	The SNMP queue did not recover correctly after being flooded.
TR 6002197	Slot cards could report an incorrect time even though the shelf controller was correctly set.
TR 6002201	A TAOS unit could experience Warning 179 when a T1 line was disconnected.
TR 6002209	When receiving ISDN connections, CSMV3 slot cards could incorrectly log `invalid mdm con str`.
TR 6002216	When a TAOS unit had the default MRU set to 1500 for Multilink PPP sessions some packet loss could be experienced.
TR 6002220	When using redundant Ethernet links, incorrect routes and packet loss could result from disconnecting one of those links.

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Table 5.   Trouble report ID numbers and problems corrected in TAOS 9.1.1 (continued)

TR ID	Problem corrected
TR 6002227	MAX TNT units could incorrectly leave E1 channels in a seized state instead of releasing them to idle.
TR 6002233	MultiVoice® Gateways incorrectly detected a phase-reversal CED and failed to report fax v.21 flags.
TR 6002261	MAX TNT units were unable to use BACP to initiate lowering the available bandwidth by dropping a channel during an ISDN MPPP call.
TR 6002275	T1 slot cards set to an all zeros idle pattern would incorrectly have an all ones idle pattern after the card was rebooted.
TR 6002279	A TAOS unit with a CSMX modem slot card could experience a fatal error.
TR 6002320	TAOS units with MADD or CSM3V slot cards could experience FE8, FE29, or FE42 errors.
TR 6002354	Performing an open command that requires a DNS lookup could cause a Warning 999 error.
TR 6002366/ TR 6002494	Long syslog messages were truncated.
TR 6002367	The pbecho command reported incomplete information.
TR 6002369	Multiple nailed T1s between two TAOS units in a MPP configuration did not function correctly.
TR 6002395	The MADD2-SNMP agent incorrectly set the mdmIDProductDetails string.
TR 6002412	When a MultiVoice® Gateway was configured as a multiple logical gateway (MLG) using two-stage dialing, it could not use transparent cause codes.
TR 6002418	PPTP-connected web browsers failed to display JPEG images because buffers larger than those supported by HDLC were not transmitted.
TR 6002423	The MultiVoice® Gateway was incorrectly set to use B3 as the busy tone for Brazil instead of the correct B2.
TR 6002442	TAOS units upgraded to TAOS 9.1.0 were not able to send data across frame relay switched PVCs.
TR 6002448	ATMP tunnels would incorrectly remain active even after it's PVC got disconnected.
TR 6002458	If an E1 profile had the number-complete parameter set to time-out, a Warning 179 could occur.
TR 6002468	Tag 0x99 (estimated average latency) has been added in IPDC messages (RCR/ACR), which is supported by SoftSwitch.
TR 6002504	An incorrect LCN was being returned by a MultiVoice® Gateway in FastStart elements.

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TAOS 9.1.1 enhancements and corrections
TAOS 9.1.1 corrected problems

Table 5.   Trouble report ID numbers and problems corrected in TAOS 9.1.1 (continued)

TR ID	Problem corrected
TR 6002505	H.323 calls made by a MultiVoice® Gateway configured with video codecs that included CIFs were resetting.
TR 6002512	IP-IP decapsulation was not supported even when doing IP-IP encapsulation.
TR 6002528	DSCP (Differentiated Services Code Point) marking did not work correctly for OC3-ATM2 slot cards. Only the first packet was marked.
TR 6002534	When the d-channel became unavailable, it was reported in the Line/T1-stats and SNMP trap as a d-channel failure.
TR 6002536	When an E1 line was configured in NT mode, the MultiVoice® Gateway erroneously requested an optional Q.931 Information Element (IE).
TR 6002537	The RADIUS IPX network node attribute would not be correctly transferred for ATMP sessions.
TR 6002539	There were some layer 3 compliance problems in regard to ITU-T Q.931. Some connections were incorrectly established even when sent illegal information.
N/A	After call establishment and when voice announcements were repeated continuously, all audio was lost.
N/A	Audibility was lost in DRQ messages (forced drop calls) but was successful in PIN and DNIS requests.

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Notices, Known Issues, and Caveats for TAOS 9.1.9

Read these notices and known issues carefully before upgrading to TAOS 9.1.9 software.

Notice of compatibility with RFC 2833

When using RFC 2833 for dual-tone multifrequency (DTMF) tone-passing, and passing the following tones:

- *
- #
- A
- B
- C
- D

TAOS software versions 9.1.0 through 9.1.7, and TAOS 10.0 will have compatiblity problems with TAOS 9.1.9. TAOS software versions 9.1.9 and onward, and TAOS 10.0.1 and onward, are compliant with RFC 2833.

Notice of TAOS license and upgrade changes

For the release of TAOS 9.1.9, the following changes are now in effect for TAOS base software and TAOS software upgrades, service, and maintenance.

Price change for base TAOS software

With the release of TAOS 9.1.9, the MAX TNT, APX 8000, MAX 6000 and MAX 3000 hardware platforms and TAOS software are priced separately. The TAOS software license is now a mandatory item for any new order. The license grants licensees the right to use the base TAOS 9.1.9 software on the specific platform purchased. *The right to upgrade to a subsequent TAOS minor or major software release that includes new operating system software features is no longer included as part of the base TAOS software license.*

Price change for upgrades and maintenance to TAOS 9.1.9 software

Upgrades to TAOS 9.1.9 software and subsequent releases for the MAX TNT, APX 8000, MAX 3000, and MAX 6000 platforms are available through Lucent Worldwide Services as part of an annual Software Upgrade and Maintenance Service contract. These contracts are priced separately for each platform and include the following software and services:

- TAOS software updates, upgrades, and support
- TAOS software options (hashcodes), updates, upgrades, and support
- Remote technical support
- Hardware maintenance and return

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Only customers with an established Software Upgrade and Maintenance Service contract are authorized to upgrade designated TAOS-enabled units to TAOS 9.1.9 and to download the required TAOS 9.1.9 software files.

Distribution change for TAOS 9.1.9 software

TAOS 9.1.9 and subsequent general-availability TAOS software releases are no longer available from ftp.ascend.com. Upgrades to TAOS 9.1.9 and all subsequent releases and updates (maintenance releases) will be available instead from the Lucent Worldwide Services software front-end Web site at http://www.eSight.com.

TAOS software license agreement change

Lucent Technologies is introducing a new software license agreement that grants you a personal, nontransferable, nonexclusive right to use TAOS 9.1.9 in object code form only, and its accompanying documentation. The agreement prohibits you from loading or using TAOS software on any unit of Lucent equipment other than the unit for which you purchased the software, unless otherwise agreed upon in writing by Lucent.

Use of TAOS software on any equipment other than that for which it was obtained, or any material breach of these conditions, immediately and automatically terminates the license. Lucent reserves the right to pursue all available legal remedies to enforce the terms and conditions of the software license.

Notice of memory requirement in TAOS 9.1.9

To upgrade to TAOS 9.1.9, your TAOS unit must be equipped with the 32MB flash card. Please contact your Lucent sales representative to purchase the 32MB flash card.

Notice of support for Universal Port on the 96-port MultiDSP slot card

The following is a correction to the *MAX TNT TAOS 9.0 Release Note*.

The 96-port MultiDSP slot card currently supports mixing voice and data services on the same card. The following combination of services are supported:

- 96 VoIP and modem sessions, in any combination, with VoIP using either the G.729 or G.711 audio codec
- 96 VoIP sessions using either the G.729 or G.711 audio codec
- 96 modem sessions

A total of 96 ports is supported on this card.

Notice about MultiDSP cards

In TAOS 9.1.9, you can combine 48-port and 96-port MultiDSP cards in a MAX TNT unit for V.90 and ISDN dial-up termination.

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Notice about upgrading slot cards

If you replace a fast (100 MB) Ethernet-1 slot card (TNT-SL-E100) with a newer Ethernet card (TNT-SL-E10-100 or TNT-SL-E100-V-C) that supports MultiVoice®, you must write new Ethernet profiles for the new card. The old Ethernet profiles do not carry forward.

If you replace an older Hybrid Access slot card (TNT-SL-HA128 or TNT-SL-HA192) with a newer Hybrid Access card (TNT-SL-HDLC2 or TNT-SL-HDLC2-EC-C), you must write new profiles for the new cards.

If you replace a Series56 modem card (TNT-SL-48MOD-S56, TNT-SL-48MOD-SGL, TNT-SL-48MOD-S-C or TNT-SL-48MODV3-S-C) with a MultiDSP card (TNTP-SL-ADI-C, TNTV-SL-ADI-C, or APX8-SL-96DSP), you must write new profiles for the new cards.

When changing the slot card type for any slot, execute the `slot -r` command after downing (`slot -d`) or removing the existing card and before inserting a different slot card type.

Notice of parameter name changes in the External-Auth profile

In TAOS 8.0.x, the `dnis-password` and `clid-password` parameters were added to the External-Auth profile. With these parameters, you were able to set RADIUS passwords for DNIS and CLID preauthentication.

In TAOS 9.0, the `dnis-password` and `clid-password` parameters were moved to the `password` subprofile of the External-Auth profile. The parameter names were also changed, as shown in the following sample subprofile (shown with default values):

```
[in EXTERNAL-AUTH:password-profile]
clid = Ascend-CLID
dnis = Ascend-DNIS
```

If your unit is configured with DNIS and CLID passwords, after upgrading from TAOS 8.0.x to TAOS 9.1.9, the unit will no longer recognize the `dnis-password` and `clid-password` values that were set in prior releases and dial-in users might experience a busy tone.

To restore the DNIS and CLID preauthorization passwords, you must apply the value of the `dnis-password` and `clid-password` parameters (set in earlier TAOS 8.0.x releases), to the new `dnis` and `clid` parameters as follows:

```
admin> read external-auth
EXTERNAL-AUTH read

admin> set password-profile dnis = secretdnis

admin> set password-profile clid = secretclid

admin> write
EXTERNAL-AUTH written
```

Notice of nonsupport for WORM-ARQ on the 96-port MultiDSP slot card

WORM-ARQ is not currently supported on the 96-port MultiDSP slot card. In TAOS 9.1.9, WORM-ARQ for personal digital cellular (PDC) phones is supported *only* on the 48-port MultiDSP slot card. NTT DoCoMo developed the WORM-ARQ technology to maintain transmission quality for PDC wireless phones in Japan. The Lucent Technologies WORM-ARQ license can be enabled only for the 48-port MultiDSP slot card.

Notice of discontinuance of configurable RADIUS port and ID space

In TAOS 8.0.x, the default settings for User Datagram Protocol (UDP) source ports and ID spaces for communication with a RADIUS server specified the use of a unique source port for each card and a distinct ID space for both authentication and accounting requests. However, the MAX TNT unit could be configured to use a single source port and ID space system wide, to accommodate certain RADIUS server daemons that had a system-unique requirement.

Because no known RADIUS servers continue to maintain this requirement, and because the unit's port density makes the use of a single port and ID space undesirable, with TAOS 9.1.0, and TAOS 9.1.9, the MAX TNT always uses port-unique source ports and always sends RADIUS authentication and accounting requests with distinct RADIUS IDs. The following parameters are therefore no longer supported and have been removed from the External-Auth profile:

```
[EXTERNAL-AUTH]
rad-id-space = distinct
rad-id-source-unique = port-unique
```

Note: The rad-ip-space and rad-id-source-unique parameters no longer appear in the External-Auth profile in TAOS 9.1.9. If you downgrade the unit to an earlier release, the parameters revert to their default values for that release.

Notice of a tunneling configuration requirement

If you are configuring Ascend Tunnel Management Protocol (ATMP), Layer 2 Tunneling Protocol (L2TP), or Point-to-Point Tunneling Protocol (PPTP) on a TAOS unit, you must set the System-IP-Address parameter of the IP-Global profile to specify a system IP address.

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Notice concerning call signaling support on T1 and E1 slot cards

When configuring call signaling support on E1 trunks:

- Do not configure R1/R2 multi-frequency (MF) signaling and R2 dual-tone multi-frequency (DTMF) signaling for different trunks on the same E1 slot card.

  When configuring call signaling on E1 trunks, the MAX TNT loads only one tone look-up table per slot card. The tone look-up tables for R1/R2 MF and R2 DTMF signaling are unique to the call signaling type specified by the Signaling-Mode parameter. The MF tone look-up table will not support DTMF signaling, and the DTMF tone look-up table will not support R1/R2 MF signaling.

When configuring call signaling support on T1 trunks:

- Do not configure ISDN or inband, robbed-bit signaling and Feature Group D (FGD) signaling for different trunks on the same T1 slot card. The tone look-up tables for FGD are unique to the call signaling requirements for Access Tandem switching.

- Do not configure inband multifrequency (MF) signaling and inband dual-tone multi-frequency (DTMF) signaling for different trunks on the same T1 slot card. The tone look-up tables are unique to the call signaling type specified by the Signaling-Mode parameter. The MF tone look-up table will not support DTMF signaling, and the DTMF tone look-up table will not support MF signaling.

Notice of change in egress call routing configuration

Internal changes made to MultiVoice® in TAOS 8.0-118.1 still apply in TAOS 9.1.9, which cause the MAX TNT unit to check both the Call-Route and the T1 > Line-Interface > Channel-Config > Channel-Config#N profile when determining which slot and line is used to route the call. When determining call routes, MultiVoice® will use:

1 The Trunk Group parameter in the Call-Route profile to identify slot cards where the call can be routed

2 The Trunk Group parameter at the T1 > Line-Interface > Channel-Config > Channel-Config#N profile to identify a line/DS0, if any are available, which can egress the call.

In the following example, T1 slot cards are installed in Slot 12 and Slot 13. For the T1 card in Slot 12 of the MAX TNT, all eight T1 trunks are assigned to trunk group 12 using the Trunk-Group parameter in both the Call-Route profile for the T1 slot card and the T1 > Line-Interface > Channel-Config > Channel-Config#N profiles for each DS0 as follows:

```
tnt45>list
[in CALL-ROUTE/{ { { shelf-1 slot-12 0 } 0 } 0 }]
index* = { { { shelf-1 slot-12 0 } 0 } 0 }
trunk-group = 12
phone-number = ""
preferred-source = { { any-shelf any-slot 0 } 0 }
call-route-type = trunk-call-type
```

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```
tnt45>list 1
[in T1/{ shelf-1 slot-12 1 }:line-interface:channel-con-
fig[1]]
channel-usage = switched-channel
trunk-group = 12
phone-number = ""
call-route-info = { any-shelf any-slot 0 }
```

When configuring call routing, you must provision the following:

1   At the least, a T1 or an E1 profile must have a trunk group set at the slot or line level which matches the trunk group prefixed to a call's dial string. Setting `trunk-group=0` is equivalent to specifying any trunk group.

2   All channels on the same line must be specified with the same trunk group .

3   If a call is accepted onto a slot card, you must have at least one line and channel on that card with a matching trunk group in `T1 > Line-Interface > Channel-Config`

It is recommended to always create a `Call-Route` profile for each line of a T1 card. Specify the trunk group at the line level and for each channel at the channel level. In the following example, on the T1 slot card installed in Slot 7, the first T1 trunk is assigned to trunk group 7 using the `Trunk-Group` parameter in the Call-Route profile for that T1 trunk and the `T1 > Line-Interface > Channel-Config > Channel-Config[1]` profile as follows:

```
admin>list
[in CALL-ROUTE/{ { { shelf-1 slot-7 1 } 0 } 3 } ]
index* = { { { shelf-1 slot-7 1 } 0 } 3 }
trunk-group = 7
phone-number = ""
preferred-source = { { any-shelf any-slot 0 } 0 }
call-route-type = voip-call-type

admin>list 1
[in T1/{ shelf-1 slot-7 1 }:line-interface:channel-con-
fig[1]]
channel-usage = switched-channel
trunk-group = 7
phone-number = ""
call-route-info = { any-shelf any-slot 0 }
```

Though other methods may work in limited situations, these are not discussed here because they usually do not scale to multiple T1 card configurations that use trunk groups.

Known issue regarding RFC 2003 compliance

In TAOS 9.1.1, RFC 2003 compliant IP in IP encapsulation is implemented by setting an appropriate RADIUS Tunnel-Type Attribute in a RADIUS users record to pass a value of seven (7) to the TAOS unit. The TAOS dictionary indicates the Tunnel Type Attribute as "IP-in-IP". Other RADIUS dictionaries may scecify "IP-IP".

Known issue linking more than one PVC to a single traffic shaper

In TAOS 9.1.9, when two or more private virtual circuits (PVCs) are configured to use the same traffic shaper, one PVC can consume more than its proportional share of the shaper's transmit buffers, preventing other PVCs from transmitting at their maximum allowed bandwidth.

As long as none of the PVCs exceed their respective bandwidth limits, traffic shaping performs as expected. However, if one of the PVCs exceeds its bandwidth limit, it can use all of the traffic shaper's pool resources, potentially preventing all throughput from other PVCs in the pool. In cases where more than one PVC in a pool is requesting more than its allotted benefit, the PVC with the most traffic has the highest probability of obtaining pool resources.

Caveats in this release

You should be aware of the following issues in TAOS 9.1.9 software:

- As new features are added to each TAOS release, the amount of memory used by the operating system increases. TAOS units will report less available memory with each subsequent release.

- Before changing an ATM connection's (VPI-VCI) assignment, you must disable the connection on a MAX TNT unit's OC3 (copper) ATM slot card (TNT-SL-OC3-C) or a MAX TNT unit's OC3 (fiber) ATM slot card (TNT-SL-OC3-F).

- Multilink Protocol (MP) bonding of analog calls is supported, but some client modems and software might have compatibility problems.

- Configurable receive and transmit data rate limits are not supported on the MAX TNT unchannelized DS3-ATM slot card (TNT-SL-UDS3A). Configurable receive and transmit data rate limits *are* supported on the unchannelized DS3 Frame slot card (TNT-SL-UDS3).

Exhibit C-7

Lucent Technologies
Bell Labs Innovations

MAX TNT® True Access™ Operating System (TAOS) 8.0-103 (MultiVoice)

Addendum

Part Number: 7820-0683-001
For software version 8.0-103
April 2000

Notice

Every effort was made to ensure that the information in this document was complete and accurate at the time of printing. However, information is subject to change.

Security Statement

In rare instances, unauthorized individuals make connections to the telecommunications network through the use of access features.

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Lucent Technologies

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Customer Service provides a variety of options for obtaining information about Lucent products and services, software upgrades, and technical assistance.

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If you need to contact Lucent for help with a problem, make sure that you have the following information when you call or that you include it in your correspondence:

- Product name and model.
- Software and hardware options.
- Software version.
- If supplied by your carrier, Service Profile Identifiers (SPIDs) associated with your line.
- Your local telephone company's switch type and operating mode, such as AT&T 5ESS Custom or Northern Telecom National ISDN-1.
- Whether you are routing or bridging with your Lucent product.
- Type of computer you are using.
- Description of the problem.

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Italy	(+33) 492 96 5676
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Middle East/Africa	(+33) 492 96 5679
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For the Asia Pacific Region, you can find additional support resources at http://apac.ascend.com

Obtaining assistance through correspondence

Lucent maintains two email addresses for technical support questions. One is for customers in the United States, and the other is for customers in Europe, the Middle East, and Asia. If you prefer to correspond by fax, BBS, or regular mail, please direct your inquiry to Lucent's U.S. offices. Following are the ways in which you can reach Customer Service:

- Email from within the U.S.—support@ascend.com
- Email from Europe, the Middle East, or Asia—EMEAsupport@ascend.com
- Fax—(510) 814-2312
- Customer Support BBS (by modem)—(510) 814-2302

Write to Lucent at the following address:

Attn: Customer Service
Lucent Technologies
1701 Harbor Bay Parkway
Alameda, CA 94502-3002

MAX TNT TAOS 8.0-103 (MultiVoice) Addendum

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Notices and known issues

Notice about MAX TNT TAOS 8.0.1 and 8.0-103

The core and extended features available in MAX TNT TAOS 8.0.1 are incorporated in TAOS 8.0-103. Details about using TAOS features, other than MultiVoice, may be found in the MAX TNT *True Access™ Operating System (TAOS) 8.0.1 Addendum.*

Notice of modified RADIUS port and ID space defaults

Note: This modification could cause authentication failures with RADIUS servers that do not support distinct UDP source ports. If your RADIUS server does not support authentication requests from multiple source ports, you must reset the modified parameters to their previous values.

The default settings for User Datagram Protocol (UDP) source ports and ID spaces for communication with a RADIUS server have been changed from single to multiple. Following are the relevant parameters, shown with the new default settings:

```
[EXTERNAL-AUTH]
rad-id-space = distinct
rad-id-source-unique = port-unique
```

MAX TNT units can use either a single global source UDP port for all slot cards, or a unique port for each card. Similarly, a unit can use one ID space for both authentication and accounting requests, or a distinct space for each type of request.

Previous TAOS versions recommended the use of multiple source ports and ID spaces for performance reasons, and because use of a single source port and ID space reduces the number of simultaneous requests that the unit can generate. However, the default settings configured a single global source port and ID space to ensure compatibility with all RADIUS servers.

In this release, the default settings have been changed to the recommended values.

If the system was already using the recommended settings, this change will have no effect.

Systems that used the previous default settings will respond as follows:

- If the RADIUS server supports distinct source ports, the system will experience a slight improvement in performance.

- If the RADIUS server does not support distinct source ports, the system will experience problems with RADIUS authentication and accounting.

To communicate with RADIUS servers that do not support distinct source ports, you must modify the External-Auth profile as follows to restore the parameters to their previous values:

```
admin> read external-auth
EXTERNAL-AUTH read

admin> set rad-id-space = unified

admin> set rad-id-source-unique = system-unique
```

```
admin> write
EXTERNAL-AUTH written
```

Notice of modified behavior during IPDC negotiation

In previous releases, the MAX TNT unit's system address was used during IP Device Control (IPDC) protocol negotiation. In previous releases, if the System-IP-Addr parameter was null, the shelf controller IP address was used.

Since MAX TNT TAOS 8.0.1, the MAX TNT unit requires a valid System-IP-Addr setting to complete IPDC negotiation. For example, the following commands explicitly set the system address to the shelf controller IP address:

```
admin> get ip-int { {1 c 1} 0} ip-address
ip-address = 10.2.3.4

admin> read ip-global
IP-GLOBAL read

admin> set system-ip-addr = 10.2.3.4

admin> write
IP-GLOBAL written
```

Note: If the System-IP-Addr setting is null, the system terminates PPP connections during the IPCP negotiation phase.

Notice of discontinuance of software support

Software support has been discontinued for the MAX TNT Ethernet-0 slot card (TNT-SL-E10), the Fast (100 MB) Ethernet-1 slot card (TNT-SL-E100), and the older MAX TNT Hybrid Access slot cards (TNT-SL-HA128 and TNT-SL-HA192).

Notice about upgrading slot cards

If you replace a MAX TNT Fast (100 MB) Ethernet-1 slot card (TNT-SL-E100) with a newer Ethernet card (TNT-SL-E10-100 or TNT-SL-E100-V-C), you must write new Ethernet profiles for the new card. The old Ethernet profiles do not carry forward.

If you replace an older MAX TNT Hybrid Access slot card (TNT-SL-HA128 or TNT-SL-HA192) with a newer Hybrid Access card (TNT-SL-HDLC2 or TNT-SL-HDLC2-EC-C), and if you replace a MAX TNT Series56 modem card (TNT-SL-48MOD-S56) with a newer Series56 card (TNT-SL-48MOD-S-C or TNT-SL-48MODV3-S-C), you must write new profiles for the new cards.

If you replace a Series56 modem card (TNT-SL-48MOD-S56, TNT-SL-48MOD-SGL, TNT-SL-48MOD-S-C or TNT-SL-48MODV3-S-C) with a MultiDSP card (TNTP-SL-ADI-C, TNTV-SL-ADI-C, or APX8-SL-96DSP), you must write new profiles for the new cards.

For any slot whose card type is being changed, you should perform a `slot -r` command after downing (`slot -d`) or removing the existing card prior to inserting a new card type.